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EXAMINER	
FINNEREN, RORY B	

ART UNIT	PAPER NUMBER
2828	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/699,763	BASTING ET AL.
	Examiner	Art Unit
	Rory Finneren	2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *November 3, 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☒ Claim(s) *30* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 6/14/04
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 30 is objected to because of the following informalities: Line 2 of the claim contains an extra "with the". Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-49 are rejected under 35 U.S.C. 102(e) as being anticipated by Desor (US 20020031160 A1).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Regarding claim 1, Desor discloses the claimed laser system comprising: first and second discharge chambers (Paragraph [0079]) being filled with a gas mixture,

containing a pair of electrodes for energizing the gas mixture and outputting an optical pulse (Fig. 5, #102 and [0018]); first (Fig. 1, C_1-L_1-C_2; and [0027]) and second (Fig. 1, C_2-L_2-C_3; and [0027]) final compression stages in electrical communication with a first discharge chamber (Fig. 1, #34); and a common pulser circuit ("solid state pulser module", [0052]) coupled to said first and second final compression stages, the common pulser circuit further containing at least one initial compressor stage capable of compressing the electrical pulse ("compression stages of the pulser circuit", [0015]), the first final compression stage operable to transmit a first portion of the electrical pulse to said first discharge chamber, the receiving of the main pulse by the first discharge chamber causing a timed discharge of the pair of electrodes in the discharge chamber, the discharge chamber being electrically isolated by the compression stages.

As to claim 2, Desor teaches a power supply (Fig. 1, #40). for providing a high voltage to a common pulser circuit (Fig. 1, #20).

With regard to claim 3, Desor discloses a storage capacitor for storing the charge from the power supply (Paragraph [0026], "primary storage capacitor" and Fig. 1, C_0).

Regarding claim 4, Desor teaches the switch of the common pulser circuit being an insulated gate, bi-polar transistor (Fig. 1, #44).

As to claim 5, Desor discloses the claimed laser system wherein: the first discharge chamber comprises a master oscillator (Paragraph [0078]; (Fig. 5, #102); and the second discharge chamber comprises a power amplifier (Paragraphs [0078] [0079]), the master oscillator and power amplifier being arranged in a MOPA

arrangement such that a light pulse discharged from the master oscillator is received and amplified by the power amplifier (Paragraph [0079]).

With regard to claim 6, Desor discloses a trigger signal generator capable of providing a trigger signal to the common pulser circuit (Fig. 2, #110).

As to claim 7, Desor teaches a processing unit capable of determining a delay between the providing of the trigger signal and a toggling of the switch of the common pulser circuit ("delay lines", Fig. 2, #121).

With regard to claim 8, Desor teaches a processing unit further capable of determining a delay between the providing of the trigger signal and a discharge of the discharge chamber (Abstract and claim 1, lines 1-4).

Regarding claim 9, Desor discloses a discharge detector in communication with the processing unit for providing a timing of the discharge ("diagnostic module", Fig. 5, #118).

As to claim 10, Desor discloses the claimed invention except the reference does not explicitly disclose that the discharge detector comprises a photodiode. However, It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a photodiode to detect a light pulse since photodiodes were commonly used in the art for this purpose.

Regarding claim 11, Desor teaches a discharge detector that is an electrical sensor capable of detecting the discharge of the pair of electrodes in a discharge chamber (Fig. 5, "discharge circuit").

With regard to claim 12, Desor discloses a reset current unit capable of applying a reset current to the common pulser circuit ("reset windings", Fig. 1, #36, 38, 40; Paragraph [0029]).

As to claim 13, Desor teaches a reset current module for each of said first and second final compression stages (Fig. 1, #38, #40), each reset module capable of providing a reset current to adjust the timing of the discharge.

With regard to claim 14, Desor discloses pre-ionization modules in communication with discharge chambers, the pre-ionization modules capable of controlling the time at which pre-ionization energy is supplied to the discharge chambers (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

Regarding claim 15, Desor teaches a pre-ionization circuit in communication with at least one discharge chamber (Fig. 1, #30).

With regard to claim 16, Desor teaches a compensation circuit in communication with the common pulser circuit and capable of compensating for time delay jitter between discharges in each of the discharge chambers ("delay compensation system", Fig. 2, and paragraph [0037]).

As to claim 17, Desor teaches a compensation circuit providing compensation by adjusting a charging voltage of a common pulser circuit (Paragraph [0037]).

With regard to claim 18, Desor teaches a compensation circuit capable of controlling a delay time jitter to sub-nanosecond levels (Paragraph [0027]).

Regarding claim 19, Desor teaches a feedback loop in communication with the compensation circuit, capable of detecting slow drifts in a time delay between the discharges (Paragraph [0059]).

With regard to claim 20, Desor teaches a fast analog circuit in communication with the compensation circuit and capable of compensating for fast drifts in a time delay between a discharge in a first discharge chamber and a discharge in a second discharge chamber ("Delay lines", Fig. 2, #121; Paragraph [0038]).

With regard to claim 21, Desor teaches a high voltage probe in communication with the compensation circuit capable of measuring a charging voltage applied in at least on discharge chamber. ("HV Control Board", Fig. 2, #120; Paragraph [0038]).

Regarding claim 22, Desor discloses a master oscillator (Paragraph [0078]) including therein a first discharge chamber (Fig. 5, #102) containing electrodes for energizing the gas mixture and outputting an optical pulse (Paragraph [0018]); a power amplifier (Paragraph [0078]) including therein a second discharge chamber (Paragraph [0079]) filled with a second gas mixture, the second discharge chamber containing electrodes for energizing the gas mixture (Paragraph [0018]), the power amplifier capable of receiving the optical pulse from the master oscillator and amplifying the optical pulse to transmit as an output pulse (Paragraph [0079]); first (Fig. 1, C_1-L_1-C_2; paragraph [0027]) and second (Fig. 1, C_2-L_2-C_3; paragraph [0027]) final compression stages in electrical communication with the first and second discharge chambers; and a common pulser circuit ("solid state pulser module", [0052]) coupled to said first and second final compression stages, the pulser circuit containing a switch component for

sending an electrical pulse to the discharge chambers (Fig. 1, "Tr_1"), the pulser circuit further containing at least one compressor stage capable of compressing the electrical pulse (Paragraph [0015], "compression stage of the pulser circuit"), the first final compression stage operable to transmit a first portion of the electrical pulse to the first discharge chamber and the second final compression stage operable to transmit a second portion of the electrical pulse to the second discharge chamber [Paragraph [0027]).

As to claim 23, Desor teaches a pre-ionization circuit in communication with the common pulser circuit for controlling a timing of the pre-ionization in each of the master oscillator and power amplifier (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

With regard to claim 24, Desor discloses a corona discharge component in communication with said pre-ionization circuit and being capable of providing a pre-ionization in at least one of the power amplifier and master oscillator, such that at least one of the first and second gas mixtures can have a determined pre-ionization prior to the arrival of the electrical pulse (Paragraph [0027]; Fig.1, #30).

Regarding claim 25, Desor discloses the claimed system wherein the timing of the pre-ionization can be controlled separately from the timing of the discharge in at least one of the discharge chambers (Paragraph [0050], "pre-ionization electrodes", "discharge electrodes").

As to claim 26, Desor teaches a common pulser circuit using a reset current to adjust a nominal delay difference between a discharge of the master oscillator and a corresponding discharge of the power amplifier (Paragraph [0029]).

With regard to claim 27, Desor discloses a compensation circuit in communication with the common pulser circuit and capable of compensating for time delay jitter in discharges of the discharge chambers ("delay compensation system", Fig. 2, and paragraph [0037]).

As to claim 28, Desor discloses a master oscillator (Paragraph [0078]) including therein a first discharge chamber (Fig. 5, #102) containing electrodes for energizing the gas mixture and outputting an optical pulse (Paragraph [0018]); a power amplifier (Paragraph [0078]) including therein a second discharge chamber (Paragraph [0079]) filled with a second gas mixture, the second discharge chamber containing electrodes for energizing the gas mixture (Paragraph [0018]), the power amplifier capable of receiving the optical pulse from the master oscillator and amplifying the optical pulse to transmit as an output pulse (Paragraph [0079]); a first pulser in communication with the first plurality of electrodes and capable of precisely timing a first discharge in the first discharge chamber ("solid state pulser module", paragraph [0052]; Fig. 1, #20); a second pulser in communication with the second plurality of electrodes and capable of precisely timing a second discharge in the second discharge chamber (Paragraph [0079]); and a common cooling system in thermal contact with the first and second discharge chambers (Paragraph [0010]).

Regarding claim 29, Desor teaches a discharge chamber tilted relative to the cooling system (Paragraph [0010]).

With regard to claim 30, Desor discloses a feedback loop in communication with the pulsers, the feedback loop capable of controlling the timing of the discharges (Paragraph [0059]).

Regarding claim 31, Desor discloses the claimed laser system comprising: a master oscillator ("line-narrowed oscillator", Paragraph [0078]) including therein a first discharge chamber (Fig. 5, #102) containing electrodes for energizing the gas mixture and outputting an optical pulse (Paragraph [0018]);

a power amplifier (Paragraph [0078]) including therein a second discharge chamber (Paragraph [0079]) filled with a second gas mixture, the second discharge chamber containing electrodes for energizing the gas mixture (Paragraph [0018]), the power amplifier capable of receiving the optical pulse from the master oscillator and amplifying the optical pulse to transmit as an output pulse (Paragraph [0079]);

first (Fig. 1, C_1-L_1-C_2; paragraph [0027]) and second (Fig. 1, C_2-L_2-C_3; paragraph [0027]) final compression stages in electrical communication with the first and second discharge chambers;

and a common pulser circuit ("solid state pulser module", [0052]) coupled to said first and second final compression stages, the pulser circuit containing a switch component for sending an electrical pulse to the discharge chambers (Fig. 1, "Tr_1"), the pulser circuit further containing at least one compressor stage capable of compressing the electrical pulse (Paragraph [0015], "compression stage of the pulser circuit"), the first final compression stage operable to transmit a first portion of the electrical pulse to the first discharge chamber and the second final compression stage operable to

transmit a second portion of the electrical pulse to the second discharge chamber [Paragraph [0027]);

first and second discharge detectors, the first discharge detector capable of detecting a discharge in the master oscillator and the second discharge detector capable of detecting a discharge in the power amplifier ("diagnostic module", Fig. 5, #118);

a processing device capable of receiving a detection signal from the discharge detectors, and determining a delay time between the outputting of the optical pulse in the master oscillator and the discharge of the second pair of electrodes in the power amplifier, the processing device also being capable of adjusting the delay time ("delay lines", Fig. 2, #121 and "high voltage control board", Fig. 2, #120).

With regard to claim 32, Desor teaches a pre-ionization circuit in communication with the common pulser circuit for controlling a timing of the pre-ionization in each of the master oscillator and power amplifier, capable of adjusting the delay time (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

As to claim 33, Desor discloses a reset current unit capable of applying a reset current to the common pulser circuit in order to control at least one of the timing and shape of the electrical pulse, such that the processing device can adjust the delay time by directing the reset current unit to adjust the reset current ("reset windings", Fig. 1, #36, 38, 40; Paragraph [0029]).

Regarding claim 34, Desor teaches a first reset current module (Fig. 1, #38) for said first final compression stage and a second reset current module (Fig. 1, #38) for

said second final compression stage, each reset current module capable of providing a reset current to adjust the timing of the discharge in the respective discharge chamber, such that the processing device can adjust the delay time by directing at least one of the first and second reset current modules to adjust the reset current in the corresponding final compression stage (Paragraph [0029]).

With regard to claim 35, Desor discloses the claimed laser system comprising:

a master oscillator (Paragraph [0078]) including therein a first discharge chamber (Fig. 5, #102) containing electrodes for energizing the gas mixture and outputting an optical pulse (Paragraph [0018]);

a power amplifier (Paragraph [0078]) including therein a second discharge chamber (Paragraph [0079]) filled with a second gas mixture, the second discharge chamber containing electrodes for energizing the gas mixture (Paragraph [0018]), the power amplifier capable of receiving the optical pulse from the master oscillator and amplifying the optical pulse to transmit as an output pulse (Paragraph [0079]);

a common pulser circuit ("solid state pulser module", [0052]) coupled to said first and second final compression stages, the common pulser operable to apply an electrical pulse to the first and second final compression stages (Paragraphs [0015] and [0027]);

the first final compression stage operable to transmit a first portion of the electrical pulse to the master oscillator (Fig. 1, C_1-L_1-C_2; paragraph [0027]);

the second final compression stage operable to transmit a second portion of the electrical pulse to the power amplifier (Fig. 1, C_2-L_2-C_3; paragraph [0027]);

a first detector which detects a first time at which a discharge occurs in the master oscillator ("diagnostic module", Fig. 5, #118);

a second detector which detects a second time at which a discharge occurs in the power amplifier ("diagnostic module", Fig. 5, #118); and

a processing device capable of receiving detection signals from the discharge detectors, such that the processing device can determine a delay time between the first time and the second time, and further the processing device is operable to adjust the delay time ("delay lines", Fig. 2, #121 and "high voltage control board", Fig. 2, #120).

As to claim 36, Desor teaches a method of generating an output beam in an excimer laser system, comprising:

Generating an optical pulse using a timed discharge in a master oscillator ("line-narrowed oscillator", Paragraph [0078]);

Passing the optical pulse through a power amplifier, such that the optical pulse is amplified by a second timed discharge in the power amplifier (Paragraph [0078]); and

Controlling a timing of the first and second timed discharges using a common pulser circuit ("solid state pulser module", [0052]), wherein the common pulser circuit contains a switch component (Fig. 1, "Tr_1") for sending an electrical pulse to the master oscillator and power amplifier to trigger each timed discharge, wherein there is at least one compressor stage in the circuit (Paragraph [0015], "compression stage of the pulser circuit") capable of compressing the electrical pulse sent from the switch component, and wherein first and second final compression stages in electrical communication with the common pulser circuit, master oscillator, and power amplifier

are capable of compressing a first portion of the electrical pulse being sent to the master oscillator and a second portion of the electrical pulse being sent to the power amplifier while electrically isolating the master oscillator and power amplifier (Paragraph [0032]).

With regard to claim 37, Desor further discloses controlling a pre-ionization timing in each of the master oscillator and power amplifier (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

Regarding claim 38, Desor teaches controlling the timing including controlling a reset current in each of the master oscillator and power amplifier (Paragraph [0029]).

Regarding claim 39, Desor discloses controlling the timing including controlling a reset current in the common pulser circuit (Paragraph [0029]).

As to claim 40, Desor discloses a system comprising compensating for time delay jitter in the first and second discharges using a compensation circuit in communication with the common pulser circuit ("delay compensation system", Paragraph [0037] and Fig. 2).

As to claim 41, Desor discloses a cooling system in thermal contact with a discharge chamber and capable of equalizing the temperatures in the discharge chamber (Paragraph [0010]).

With regard to claim 42, Desor teaches a method comprising:

receiving a trigger signal to a common pulser circuit (Fig. 2, #110), the common pulser circuit including a solid-state switch (Fig. 1, "Tr_1") and at least one compressor stage (Paragraph [0015], "compression stage of the pulser circuit");

toggling the switch of the common pulser circuit in order to generate an electrical pulse ("pulser switch", Fig. 2, #170);

compressing the electrical pulse using at least one compressor stage (Paragraph [0015], "compression stage of the pulser circuit");

directing the voltage pulse to a first final compression stage oscillator (Fig. 1, C_1-L_1-C_2; paragraph [0027]) and a second final compression stage (Fig. 1, C_2-L_2-C_3; paragraph [0027]);

outputting an electrical pulse from the first final compression stage to a master oscillator (Paragraph [0027]), the master oscillator containing a as mixture and a pair of electrodes for energizing the gas (Fig. 5, #102 and [0018]); and

outputting an electrical pulse from the second final compression stage to a power amplifier in order to trigger a second discharge, the power amplifier receiving the optical pulse from the master oscillator such that the second discharge amplifies the optical pulse in order to transmit an output pulse (Fig. 1, C_2-L_2-C_3; paragraph [0027]).

Regarding claim 43, Desor discloses a method comprising monitoring the delay time (Paragraph [0015]).

As to claim 44, Desor discloses a method comprising controlling a pre-ionization in the master oscillator in order to control a timing of the first discharge (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

As to claim 45, Desor discloses a method comprising controlling a pre-ionization in the power amplifier in or to control a timing of the second discharge (Fig. 1, #30; Paragraphs [0027], [0050] and [0052]).

Regarding claim 46, Desor discloses a method comprising controlling a reset current supplied to the first final compression stage in order to control a timing of the first discharge (Paragraph [0029]).

With regard to claim 47, Desor discloses a method comprising controlling a reset current supplied to the second final compression stage in order to control a timing of the second discharge (Paragraph [0029]).

As to claim 48, Desor teaches monitoring the timing of the first and second discharges (Paragraph [0079]).

Regarding claim 49, Desor discloses using a processing device to receive information about the timing of the discharges and adjusting the timing of the discharges ("delay lines", Fig. 2, #121 and "high voltage control board", Fig. 2, #120).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rory Finneren whose telephone number is (571) 272-2243. The examiner can normally be reached on Mon. - Fri. 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Oh Harvey can be reached on (571) 272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

rbf

MINSUN OH HARVEY
PRIMARY EXAMINER